TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT
CHARACTERIZATION FOR WASTE HANDLING, PACKAGING AND PROCESSING FOR 233-S

Identification No.: RL-DD060
Date: August 2001
Program: Decontamination and Decommissioning
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP01
Waste Stream: Characterization of LLW debris (ER-05, risk = 4) and TRU debris (T3-ER, risk = 5)
TSD Title: N/A
Waste Management Unit (if applicable): N/A
Facility: 233-S

Priority Rating: This entry addresses the Accelerated Cleanup: Paths to Closure (ACPC) Priority:

____ 1. Critical to the success of the ACPC
_X_ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Characterization system for waste handling, packaging and processing at 233-S.

Need/Opportunity Category: *Technology opportunity* - the project desires an alternative to the current or planned baseline technology/process (i.e., a baseline exists but can be improved).

Need Description: A system is needed to provide an electronic means of tracking waste material, characterizing material as it is being packaged and providing a criticality go/no-go for packaging. In addition, waste that is below criticality quantity concerns needs to be screened to determine if either low-level or transuranic levels are present. Due to the rigor required for transuranic waste documentation, the waste tracking system is required to track waste component characterization and physical property information.

Schedule Requirements:
Earliest Date Required: 10/1/2001
Latest Date Required: 12/31/2004

Problem Description: Waste streams expected from decommissioning 233-S include low-level waste, hazardous waste, mixed waste, transuranic (TRU) waste, TRU-mixed waste, non-hazardous/non-radioactive waste, and recyclable and excessable waste. Waste separation and segregation are planned to minimize waste.

Benefit to the Project Baseline of Filling Need: Cost savings could result by being able to properly segregate materials, surfaces and equipment so that the proper, least-cost disposal methods are used.

Functional Performance Requirements: The system must provide an electronic means of tracking waste material, real-time characterization of material as it is being packaged, a criticality go/no-go for packaging, and a signal when the maximum 100 gm limit for plutonium loading has been exceeded. All material must be non-destructively assayed to a 95% upper confidence level. The system must alleviate the need to package prior to characterizing to avoid the current need to unpackage and decontaminate. Real-time characterization of the waste is required to allow for rapid segregation and separation on an item-by-item basis.

WBS No.	***TIP No***.
1.4.03.3.1.02.06.03.10.42.01	N/A

Relevant PBS Milestone: PBS-MC-031

Justification for Need:

Technical: A rapid means to segregate materials with the proper characterization of wastes will lead to waste minimization.

Regulatory: Segregation is needed to meet waste disposal requirements.

Environmental Safety and Health: Improved worker safety could result with the use of remote systems.

Cost Savings Potential (Mortgage Reduction): Rough order of magnitude (ROM) life cycle cost (LCC) savings of $200K. LCC savings estimate is based on the assumption that waste characterization technologies would reduce the FY2002 and FY2003 costs by 2%. The FY2002/2003 Project cost of $10.7M was assumed based on DOR/RL-97-44, Volume 5, Revision3, September 2000. Significant costs savings could result by being able to properly segregate materials, surfaces and equipment so that the proper, least-cost disposal methods are used.

Cultural/Stakeholder Concerns: Reduction in handling and the amount of materials to be handled, stored or disposed as a waste product is desired.

Other: None identified

Current Baseline Technology: Segregation is accomplished by hand, using standard characterization methods (e.g., wipes, laboratory analysis, radiation detection - both general and energy specific such as gamma spectral analyses). An alternative is management of material as contaminated based on process knowledge.

End-User: Environmental Restoration Project

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